One of the most important novel points of manipulatory detail which we notice, is the value of mucilage as an imbedding agent when the microtome is employed for freezing, as suggested by Dr. Pritchard. It depends on the fact that "frozen mucilage can be sliced as readily as a piece of cheese," a most valuable property, as all who have had any experience will acknowledge.

Prof. Rutherford has supplied a deficiency. He has given us a manual which will meet the requirements of a large class of students who will never find it necessary to enter into the details of practical histology so minutely as they are discussed in larger works, such as the "Handbook for the Physiological Laboratory," or the still deeper manual of Stricker.

OUR BOOK SHELF

A Yachting Cruise in the South Seas. By C. F. Wood. With six photographic illustrations. (London: King and Co., 1875.)

MR. WOOD'S narrative is so interesting that we wish it had been very much longer. He has made several voyages among the Pacific Islands during the last eight years, and, judging from this and what he tells us in the work before us, he must possess much valuable information concerning these islands, and especially with regard to their puzzling populations, which he would do well to publish in detail, and which would be welcomed especially by ethnologists. Mr. Wood is evidently a careful observer, and has the power of describing what he observes interestingly and clearly.

The present volume contains a narrative of a cruise which the author made, starting from New Zealand, from May to December 1873, among some of the most interesting groups of the Pacific Islands. Among the islands visited during this time were Rotumah, to the N.E. of Fiji, Futuna, Savaii, and Upolu, in the Samoan group; Niuafu, some of the islands in the Fiji group, the New Hebrides, the Solomon Islands, the Caroline Islands, Oualan, the Mulgrave Islands, and the Ellice group. Concerning every island which he visited, Mr. Wood has some interesting and valuable information to give, either about its physical condition, its products, its people, its history, or its antiquities. One of the main objects of his cruise was the collection of native implements and weapons, and in this he seems to have succeeded to his heart's content. His observations concerning the people seem to us especially valuable; he has gathered many traditions as to their migrations, and gives some specimens of folk-lore. In many of the islands the natives seem restless and discontented, and Mr. Wood was frequently petitioned to give them a passage from one island to another. Like many other Pacific voyagers, he has but a poor opinion of the results of the attempts which have been made to Christianise the natives. Not that he disapproves of attempting to civilise them and to raise them in the scale of humanity, but he thinks the methods which are generally adopted are quite abortive. The unmodified European garment of civilisation evidently cramps and enervates the Pacific Islander.

The information which Mr. Wood gives concerning the Rotumans, their traditions as to their predecessors in the island, their migrations, customs, superstitions, folk-lore, &c., is especially valuable. He refers briefly to the remarkable mounds among the hills in Bonabi, or Ascension Island, in the Caroline group, about which them have no tradition, but which would be likely to repay a careful examination. Quite as interesting, and still more wonderful, are the remains of large buildings of stone in the same island, some of the blocks of which are of immense size, and concerning which also the natives seem to have no traditions. Mr. Wood believes these ruins to be the work of a people that have passed away, and it is very unlikely that the original buildings were the work of passing Spaniards, as has been supposed. We have certainly much yet to learn concerning the history and relationships of the Pacific Island populations, and it is a subject well worth careful investigation. Mr. Wood's modest volume is a valuable, though small, contribution to our knowledge of the subject; he must, we should think, have a great deal more to tell as the result of his long intercourse with these islands. The few autotype illustrations are appropriate and well executed.

LETTERS TO THE EDITOR

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.*]

Living Birds of Paradise in Europe

WE have just received at the Zoological Gardens of Dresden two living Birds of Paradise, viz., *Paradisea papuana*, from New Guinea, and *Paradisea apoda*, from the Aru Islands, both males, in excellent health and fine condition. Mr. von Below, Assistant-Resident of Makassar, in Celebes, brought them home in a three-months' passage from Makassar, *viâ* Java, Suez, Gibraltar, London, and Hamburg to Dresden, where he intends to spend the winter, and has deposited the birds in the Zoological Gardens. They have already been about three years in captivity with him at Makassar, where I saw them when passing through that place to New Guinea in 1873. The birds, therefore, are accustomed to cage-life, and as the conditions under which we have placed them are most favourable—consisting chiefly in a large space to allow free movement, and in an equal temperature of about 20° Réaumur—there is some hope of our being able to keep them alive. Mr. von Below got these birds through native traders who have their home at Makassar and trade to New Guinea and the Aru Islands. He fed the birds in India with grasshoppers, bananas, and rice, and on board the steamers with the same, cockroaches being substituted for grasshoppers. In Dresden we try to feed them with bread, rice, and worms (*Mehlwürmer*). Both are very active, and cry their well-known "wôk, wôk" with much force; the specimen of *Paradisea apoda* especially is not the least shy, and takes the worms out of one's hands. Their fine plumage suffered, of course, on the voyage, but I was astonished to see that it was not damaged more. As they probably will moult from about November till April, the plumage will not be at its finest condition till the month of May, and, supposing that the readers of NATURE will be interested in the further fate of these Birds of Paradise, I shall report in time how they are getting on.

I believe I am not mistaken in saying that a living specimen of *Paradisea apoda* has never before been alive in Europe. The two Birds of Paradise which Mr. Wallace brought home, which he had bought at Singapore, were *Paradisea papuana* (if I remember correctly, having no books at hand here); Mr. Cerrutti, some years ago, brought over a specimen of *Seleucides alba*, but I did not hear how long it lived in Europe. No other species of Birds of Paradise have yet been brought alive to Europe, so far as I know, and we may therefore felicitate Mr. von Below on having increased the number of these at least to three.

The inhabitants of those parts of New Guinea which I visited in 1873 are not accustomed to catch *Paradisea papuana* alive, as Mr. Wallace states is the case with *Paradisea apoda* from the Aru Islands; they only know how to kill the bird with the arrow, and I did not succeed in teaching them otherwise, but I suppose that the Papooas of the south-west coast of New Guinea know how to catch the Birds of Paradise alive, and that Mr. von Below's specimen is from that part of New Guinea.

Wildbad Gastein, Sept. 11 A. B. MEYER

Source of Volcanic Energy

MR. W. S. GREEN, like others of Mr. Mallet's supporters, takes wider ground than he did himself in his original paper. It is obvious that he regarded his experiments conclusive as to the amount of heat that could be produced by rock crushing

His advocates, however, and he himself in his later papers, appeal to pressures within the earth enormously greater than those obtained by the mechanical contrivances used, and consider that proportionately greater heat may be evolved.

My "Remarks" at the Geological Society, now published in *The Journal*, were primarily framed with reference to Mr. Mallet's paper as it stood, although I think they are a tolerably satisfactory reply even to the theory as now extended. I have, however, lately gone into the question on first principles, and have satisfied myself that, accepting the conditions lately assumed by Mr. Mallet as a basis, the theory can be shown to be untenable. I hope that a paper containing the grounds of my conclusion will shortly appear.

I am unable to understand how Mr. Green proposes to account for the development of forces as productive of heat through means of "the gravitation of the whole mass" (of the earth) "to itself," otherwise than by "the gravitation of the surface upon a retreating nucleus;" because, unless room be given by a retreating nucleus for the parts to descend, there can be no motion, and consequently no heat. O. FISHER

P.S.—Upon further consideration of Mr. Green's letter, it strikes me that he has misunderstood my meaning in a way that I did not at first perceive. He says that I "object to the possibility of assuming high *local* temperatures to be produced by the transformation of tangential forces into heat within the earth's crust;" as if I objected to any localisation. What I did object to was, not a localisation of work and heat, but a localisation within a localisation, such that the heat of crushing a certain localised volume should fuse a further localised portion of the crushed volume.

Harlton, Cambridge, Sept. 11

Important Discovery of Remains of *Cervus megaceros* in Ireland

DURING 1847, when draining a bog at Kellegar among the Dublin mountains, as many as thirty heads of *C. megaceros*, together with a perfect head and antlers of a Reindeer, were discovered in a cutting of about 100 yards, by 3 yards in breadth. They were found as usual in the marl and clay under the bog. I visited this locality in March last, and from the aspect of the ground and evidence of a farmer who remembered the spot where the above were dug up, it seemed probable that by running a series of trenches parallel with the original ditch made in 1847, fresh exuviæ might be discovered. The subject was accordingly brought to the notice of the Royal Irish Academy, and a grant of 25*l.* obtained. The result has been the finding of about thirty additional heads of *Cervus megaceros*, besides numerous detached bones not yet fully determined.

Mr. R. J. Moss, Keeper of Minerals in the museum of the Royal Dublin Society, who volunteered to conduct the explorations, writes to me that he found the remains embedded in about two to three feet of clay, and often either lying on or impacted between blocks of granite as if they had been drifted into the above situation. A log of oak three feet in length was discovered among the bones in the same stratum of clay. In this instance, as generally obtains in Ireland, the cervine exuviæ are met with around the margins of the bogs, and not in the middle, as if the animals were mired in shallow water, or else their carcases had drifted with the winds or currents to the sides and outlets of the lake. Mr. Moss had to stop excavations in consequence of the grant having become expended, so that doubtless many more remains await further explorations.

This is not the only case known to me of the accumulation of carcases in a small space. I just lately examined a large assortment of skulls and bones of *C. megaceros* dug out of a bog on the property of Mr. R. Usher, of Cappagh, near Dungarvan. These were collected in a space of about 100 yards in length and 70 yards in breadth. They include heads and cast antlers of no less than fifteen individuals of the great horned deer (*i.e.* thirteen male and two female skulls), besides the cast antler of a Red Deer. The above were likewise found more towards the side than the centre of the marsh.

It seems difficult to account for these accumulations of deers' carcases, unless we suppose that a herd was mired on attempting to cross the lake. The fully developed burr of the antler so generally observed on this deer's horns discovered in the mud of ancient lakes might indicate that their owners perished in autumn during the rutting season, when doubtless many far grander scenes than those depicted in the "Challenge" and Wolf's "Race for Life" occurred along Irish lakes. The Bear and Wolf being the only large carnivores in Ireland during the Pleistocene period may account for the abundance of *C. megaceros;* moreover, we have it on historical evidence that the Wolf was extremely common during the seventeenth century, and it is probable, having neither the Hyæna nor the large Felidæ to compete with, that it might have hunted the great horned Deer into the lakes, where many would have got mired in the deepening mud along their margins. A. LEITH ADAMS

Magnus's "Elementary Mechanics"

WITH reference to the favourable notice of my "Elementary Mechanics" which appeared in last week's NATURE, I shall be glad if you will permit me to state that the second edition of my book is already in the printers' hands, and that the few errors, chiefly clerical, in the answers to the examples, which you were good enough to point out, are therein corrected.

London PHILIP MAGNUS

Sanitary State of Bristol and Portsmouth

YOUR correspondent, Dr. Black, in accounting for the uniformly low death-rate of Portsmouth, has, I venture to suggest, omitted two somewhat important coefficients. The one is a thorough and well-planned system of drainage and outfall, completed some few years since at a cost of about 150,000*l.*; the other is the presence of a floating population of several thousand healthy adult males in the shape of the garrison and the sailors.

E. J. E.

Lancaster Gate, W., Sept. 11

OUR ASTRONOMICAL COLUMN

BINARY STARS.—Mr. J. M. Wilson has communicated measures of Σ 2107, 44 Bootis, and ζ Aquarii, made at the Temple Observatory, Rugby, in 1871-75, from which the following are selected :—

Σ 2107	1872·49	Pos.	210°·0	Dist.	0″·77	
	1873·48	,,	207 ·5	,,	0 ·7	est.
	1874·65	,,	208 ·4	,,	0 ·7	est.
	1875·58	,,	215 ·5	,,	0 ·5	est.
44 Bootis	1873·25	,,	240 ·6	,,	5 ·3	
ζ Aquarii	1873·79	,,	335 ·1	,,	3 ·58	

The binary character of the first of these stars is well supported by Mr. Wilson's measures; the angular velocity appears to have regularly increased since about the year 1850, due allowance being made for the difficulty of the object. Struve's first epoch (a correction being made to the time as printed in "Mensuræ Micr.") is

1829·01 Pos. 148°·6 Dist. 1″·127

A discussion of the elements of the orbits of σ Coronæ, τ Ophiuchi, γ Leonis, ζ Aquarii, and 36 Andromedæ, by Dr. Doberck, of Col. Cooper's Observatory, Markree, forms Part 19 of volume xxv. of the *Transactions of the Royal Irish Academy*. Dr. Doberck employs the graphical method proposed by Sir John Herschel, which has been so generally applied, at least in the earlier part of the work. Correction of the approximate elements thus obtained by equations of condition will lead to satisfactory results where there are reliable single epochs, or a sufficient number of contiguous ones, to enable us to form normals. It may be questioned whether the additional labour of calculation which some of the methods of calculating double-star orbits that have been proposed necessarily involve, is rewarded by more satisfactory results than can be obtained by the application of Herschel's graphical process in the first instance, following up by equations of condition.

THE ZODIACAL LIGHT.—During the past week has appeared *Zodiacallicht-Beobachtungen in der letzten* 29 *Jahren* 1847-1875, by Prof. Heis, forming the first special publication of the Royal Observatory of Münster. It contains in considerable detail, but on a systematic plan, the particulars of the numerous observations made by